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ABSTRACT

Data on 70 independent school districts within the East Texas School Study Council were studied to develop a model, based on dissatisfaction theory, that would predict a target election of a school board member. It was hypothesized that: (1) standard variables from the dissatisfaction theory would account for a significant amount of the variance in incumbent defeat (ICD) in the election; (2) those variables identified in the regression equation accounting for the variance in ICD would be unstable across time; (3) the statistical model would predict the results of a future election better than chance would indicate; and (4) the principal predictor in such a formula would be a factor emerging from dissatisfaction theory (the Dissat-factor). Data were analyzed using a stepwise multiple regression procedure. Results indicate that: standard variables cannot be used to predict future elections (even though they continue to account for significant amounts of the variance in ICD in previous elections); the factor emerging from dissatisfaction theory (the Dissat-factor) is a stable variable that can predict ICD in future elections; and other variables dealing with the school board pattern can be useful in predicting ICD. Twelve tables are included. (TJH)

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THE DISSAT-FACTOR: RECENT DISCOVERIES IN THE DISSATISFACTION THEORY

by

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Introduction

The basic framework underlying the dissatisfaction theory of democracy is well documented in the literature and has been retraced earlier in this symposium (see Lutz, 1962; Iannoccone & Lutz, 1968; and Lutz and Iannoccone, 1978). That need not be redrawn here. Only brief mention of those few studies which led directly to research attempting to predict school board member defeat will be recounted here. It might be worth noting, however, that while this study extends the dissatisfaction research in the direction it has been moving for twenty five years, confirming and again refining the generalized model originally proposed, other research using other epistemological models in order to question or synthesize the present work with new ideas or models has generally yet to be undertaken. Such research may be an important next step.[1]

Earlier Modeling Attempts

Garberina (1975) represents the first attempt to statistically model the dissatisfaction theory. Using multiple regression techniques he demonstrated a large percentage of the variance in school board member defeat could be accounted for by using the socio-economic-political variables which had previously been identified as antecedent to incumbent defeat (ID). This seemed particularly significant in as much as Garberina had studied the ID phenomenon in Massachusetts while other studies of ID had been conducted in the West, Mid West and Southwest. Thus,

the variables seemed to have relevance over time as well as geographic location.

Garberina's study led Hunt (1980) to develop a statistical model using the same standard dissatisfaction variables in an attempt to predict ID in Ohio. The attempt failed. Although the model (based on data from a period of ten years prior to the target election) was unable to predict the results in that election, those same data were able to account for the election results on a post facto basis. This frustrating situation led to the suggestion that election predictions were similar to weather predictions, in that long term predictions were not likely to be of much value but predictions very close to the event might prove considerably more accurate (Lutz & Hunt, 1982).

This notion, led to the hypothesis that, like the variables used in predicting the weather, the standard socio-economic-political variables in the dissatisfaction theory were not stable over multi year periods. Lutz and Wang (1987) reanalyzed Hunt's data and, using that same data, produced a new factor which they called the "Dissat-factor" which enabled the production of a statistical model which would have predicted the Ohio target election results. That factor was defined as:

$$\text{Dissat xx} = 1 - \frac{\text{Number of Seats Available}}{\text{Incumbents Running \& New Challengers}}$$

where all data in the equation refer to the target election, not previous elections. Using the Hunt data for three

target elections (1973, 75 and 77) it was found that the Dissat-factor was correlated with ID at .68, .63 and .72 and in the multiple regression equations for those years the Dissat-factor obtained beta weights of .67, .67 and .71 respectively. Further, the Dissat-factor was the only consistent variable in all regression equations. This led to an attempt to develop such a model using data from another time and geographic place, that would predict a target election in that location. This paper reports the results of that research.

Method

The East Texas School Study Council was selected as the group of school districts from which data would be solicited. This choice was made because the council closely represents the 1063 independent school districts (ISDs) of the state of Texas in ADA, wealth, and rural vs. town (after the less than 10 ISDs over 50,000 ADA are removed[a]). Of considerable importance East Texas State University operates the council and has an excellent working relationship with its member ISDs assuring a good participation in data collection. Of the 82 ISDs in the council in 1984, 70 usable sets of data were obtained. These were entered into an appropriate data matrix for analysis. Four research hypotheses were developed to be tested by these data.

Hypothesis #1 - Standard variables from the dissatisfaction theory will account for a significant amount of the variance in ID in the target election.

Hypothesis #2 - Those variables identified in the regression equation accounting for the variance in ID in the target election will not be stable across time (i.e. they will not appear in the equation in the following target election).

Hypothesis #3 - It is possible, using the Dissat-factor and board pattern types to develop a statistical model which will predict the results of a future target election better than chance would dictate.

Hypothesis #4 - The principal predictor in such a formula will be the Dissat-factor (i.e. it will account for more variance than any other predictor variable).

Findings

Hypotheses #1 and #2

In order to test hypotheses #1 and #2 a step wise multiple regression procedure was used with ID as the criterion variable and all standard ratio variables used in the dissatisfaction theory as predictor variables (see Lutz & Wang, 1986 for an explanation of "standard ratio variables"). An additional variable was identified as a possible predictor variable. This variable is termed the "board pattern type."

The "board pattern" is comprised of several types of patterns identifiable within a matrix where the superintendent's re-election and each board seat re-election year runs along the horizontal axis and a chronology of ten years of board elections runs along the vertical axis (with an eleventh year serving as the base year). The election year is always the last year in the school year (i.e., 84-

85, the election is 85). Figure 1 depicts a fictitious board pattern matrix from which the pattern types emerge and Figure 2 defines 13 patterns indentified.

FIGURE 1
Board Membership Pattern and its indicators from 1975-1986 in a Dummy school district

Year	Superintendent	Board Members						
Base Year								
75-76	S75	B751	B752	B753	B754	B755	B756	B757
76-77			B762	B763				
77-78		B771						
78-79					B784			
79-80								
80-81					B804		B806	
81-82			B813					
82-83			B823					
83-84	S83							
84-85			B843					B847
85-86								

FIGURE 2
DEFINITIONS AND ILLUSTRATIONS OF BOARD PATTERN TYPES BASED ON FIGURE 1

X2xx = Number of school board member changes which is 10. These are B762, B763, B771, B784, B804, B806, B813, B823, B843, and B847, where B = the dummy board, the next two digits are the election year and the last digit is the board seat or place.

X4xx = Longest term for a superintendent which is 9 years. It is from 1975 to 1983.

X5xx = Shortest term for superintendent which is 2 years. It is from 1983 to 1985.

X6xx = Sum of longest terms of each board seat or place which equals 55. This is derived as follows:
B771 from 77-78 to 85-86 is 9 years.
B762 from 76-77 to 82-83 is 7 years.
B763 from 76-77 to 81-82 is 6 years.
B804 from 80-81 to 85-86 is 6 years.
B755 from 75-76 to 85-86 is 11 years.
B806 from 80-81 to 85-86 is 6 years.
B847 from 75-76 to 84-85 is 10 years.

X7xx = Sum of shortest term for board member is 12. This is derived as follows:
B751 from 75-76 to 77-78 is 2 years.
B752 from 75-76 to 76-77 is 1 year.
B753 from 75-76 to 76-77 is 1 year.
B784 from 78-79 to 80-81 is 2 years.
B755 from 75-76 to 75-76 is 0 years.
B756 from 75-76 to 80-81 is 5 years.
B847 from 84-85 to 85-86 is 1 year.

X11xx = The number of school board changes (ID) without superintendent turnover (ST) within two years of the last ST = 7. Calculated as B762, B763, B751, B784, B804, B806 and B813. B823 is not counted as it occurred within 2 years of 583.

X12xx = The number of <u>times</u> there are board changes within two years of ST = 1. Calculated as the years only (i.e. there could be 2,3, or 4 seats in any year but that is only year only.

X13xx = The sum of IDs within two years of ST = 1. Calculated as B823. B813 does not count as it is three years including the ST year. If two seats would have changed in 82-83 X13xx would have been 2.

FIGURE 2 continued

X14xx = The sum of IDs in the matrix when there are not STs = 90 calculated as B762, B763, B771, B784, B804, B806, B813, B843 and B847.

X15xx = X4xx/X5xx
X16xx = X13xx/X12xx
X17xx = X14xx/X13xx
X18xx = X4xx/X13xx

} All ratios of some board pattern to some other board pattern.

Using the board pattern variables for the 70 districts, the standard ratio variables and the Dissat-factor, multiple regression models were produced which were able to account for significant amounts of the variance in ID in the 1984 and 1985 elections. These data are displayed in Tables 1,2,3 and 4 for the 1984 election and Tables 5,6,7 for the 1985 election. As hypotheses #3 posits the prediction of the 1985 election no model for predicting that election appears in this set of tables.

TABLE 1

MEAN AND STANDARD DEVIATION FOR R1-84R*, BOARD PATTERN VARIABLES 1975-1983, DISSAT-84 AND RATIO VARIABLES-83

Variables	n	Mean	Standard Deviation
R1-84R	70	0.666	0.314
DISSAT-84	70	0.52487	0.23470
PTAXE01	70	-5.415	19.700
PAVG03	70	39.766	53.935
X483	70	5.929	1.705
X1383	70	2.629	3.209

* R1-84R is incumbent wins in the 1984 election.

TABLE 2

ZERO ORDER CORRELATION MATRIX OF VARIABLES IN TABLE 1 WITH R1-84R

Criterion Variable	Predictor Variables				
	DISSAT	X1383	PTAXE01	PAVG03	X483
R1-84R	0.647*	-0.270*	0.251*	-0.213*	0.092

* Indicates that the zero order correlation probability is ≥ 0.05

TABLE 3

MULTIPLE STEP WISE REGRESSION ANALYSIS WITH R1-84R AS THE CRITERION VARIABLE AND THE BOARD PATTERN VARIABLES, RATIO VARIABLES, AND DISSAT AS THE PREDICTOR VARIABLES

Variables	Beta	t	Significance t	Equation Statistics
DISSAT-84	0.61180	7.547	0.0000	F=15.9869
X1383	-0.37731	-3.515	0.0008	df=6/63
PTAXE01	0.25829	3.147	0.0025	Signif F>0.001
PAVG03	-0.15692	-1.945	0.0562	R^2 =0.60358
X483	-0.23669	-2.156	0.0349	Adj R^2 =0.56582

TABLE 4

MODEL OF 1984 BETA WEIGHTS MULTIPLIED BY PREDICTORS FOR 1985

R1-84-85 =
BDISSAT-84 * DISSAT-85 + BX1383 * X1384 + BPTAXE01 * PTAXD01 + BPAVG03 * PAVF03 + BX483 * X484 + BX1783 * X1784

TABLE 5

MEAN AND STANDARD DEVIATION FOR R1-85R*, BOARD PATTERN VARIABLES 1975-1984, DISSAT-85 AND RATIO VARIABLES-84

Variables	n	Mean	Standard Deviation
R1-85R	70	0.714	0.258
DISSAT-85	70	0.5560	0.2208
X1684	70	2.012	1.768
PADAF06	70	9.021	32.890
PTAXG01	70	-0.915	29.175
PAVC07	70	310.277	233.324
PADAA11	70	29.208	56.818
PTAXC03	70	579.077	319.567

* R1-85R is incumbent wins in the 1985 election.

TABLE 6

ZERO ORDER CORRELATION MATRIX OF VARIABLES IN TABLE 5 WITH R1-85R

Criterion Variable	Predictor Variables					
	DISSAT	X1684	PADAF06	PTAXG01	PAVC07	PADAA11
R1-85R	0.667*	-0.321*	0.229*	0.190*	-0.180	0.168

R1-85R	PTAXC03
	-0.198

* Indicates that the zero order correlation probability is ≥ 0.05

TABLE 7

MULTIPLE STEP WISE REGRESSION ANALYSIS WITH R1-85R AS THE CRITERION DEPENDENT VARIABLE AND THE BOARD PATTERN VARIABLES, RATIO VARIABLES, AND DISSAT AS THE PREDICTOR VARIABLES

Variables	Beta	t	Significance t	Equation Statistics
DISSAT	0.5900	7.696	0.0000	F=17.338
X1684	-0.13775	-1.762	0.083	df=7/62
PADAF06	0.79655	3.374	0.0013	SIGNIF F>0.001
PTAXG01	0.17906	2.36	0.0214	R^a =0.66189
PAVC07	-0.313	-3.37	0.0013	Adj R^a =0.62371
PADAA11	-0.4998	-2.20	0.0315	
PTAXC03	-0.17923	-2.086	0.0411	
(constant)				

Tables 1 through 7 demonstrate that the null form of hypothesis #1 can be rejected and the research hypothesis is confirmed. Further a comparison of Tables 1-3 with 5-8 supports hypothesis #2, as none of the standard ratio variables remain stable enough to be predictors for both election years: 84 and 85. This finding confirms that same finding by Lutz and Wang (1986). Even when using the standard socio-economic-political variables in their ratio form the standard socio-economic-political variables are not stable over time and, therefore, are not useful in predicting future elections, although some do account for a significant amount of variance in ID in any particular election.

Hypothesis #3

Based on the findings of Hunt (1980) and Lutz and Wang (1986) that the standard or even the standard ratio,

dissatisfaction variables are not stable (i.e. they suffer from shrinkage over time) it was decided to attempt to develop a prediction model using other variables. It will be remembered that this same shrinkage phenomenon also occurred between Tables 1-3 and Tables 5-7 using the present data. Further, it might be mentioned that the Thorested Index (1974) was particularly vulnerable to such shrinkage. This is of some significance as the Dissat-factor, like the Thorested Index, is a measure of challengers and incumbents. Mertz-Hosman (1988) has also noticed this phenomenon.

Tables 8-12 present data related to the prediction of the 1985 election using the Dissat-factor and board pattern variables. Table 8 presents the means and standard deviations of those variables used in producing the prediction model for the 1985 election.

TABLE 8

MEAN AND STANDARD DEVIATION FOR R1-84R*, BOARD PATTERN VARIABLES 1975-1983 AND DISSAT-84

Variables	n	Mean	Standard Deviation
R1-84R	70	0.666	0.314
DISSAT-84	70	0.5248	0.2347
X483	70	9.114	3.713
X1383	70	2.629	3.302

* R1-84R is incumbent wins in the 1984 election.

Table 9 displays the zero order correlations among the variables used in the prediction equation for the target election 1985.

TABLE 9

ZERO ORDER CORRELATION MATRIX OF VARIABLES IN TABLE 8 WITH R1-84R

Criterion Variable	Predictor Variables		
	DISSAT	X483	X1383
R1-84R	0.647*	0.092*	-0.270*

* Indicates that the zero order correlation probability is ≥ 0.05

Table 10 indicates the beta weights of the predictor variables and the test of their ability to account for a significant portion of the unexplained variance in incumbent wins in 1984. The F ratio (22.994) is significant beyond the 0.001 level and demonstrates that the stable predictors of the Dissat-factor and board pattern variables were alone able to account for a significant portion of the variance in the 1984 election.

TABLE 10

MULTIPLE STEP WISE REGRESSION ANALYSIS WITH R1-84R AS THE CRITERION VARIABLE AND THE BOARD PATTERN VARIABLES AND DISSAT-84 AS THE PREDICTOR VARIABLES

Variables	Beta	t	Significance	Equation Statistics
DISSAT84	0.65340	7.568	0.0000	F=22.994
X1383	-0.40286	-3.485	0.0008	df=3/66
X483	-0.22400	-1.933	0.0575	Signif F 0.001
(constant)				R^2 =0.41902
				Adj R^2 =0.41904

Table 11 is the regression equation used to predict the target election (1985) using only the Dissat-factor and board pattern variables and Table 12 is the test of the ability of that equation to predict.

TABLE 11

MODEL OF 1984 BETA WEIGHTS MULTIPLIED BY PREDICTORS FOR 1985

R1-84-85 =
BDISSAT-84 * DISSAT-85 + BX1383 * X1384 + BX483 * X484

TABLE 12

TEST OF 1984 MODEL TO PREDICT 1985 ELECTIONS WHEN THE CRITERION VARIABLE = INCUMBENT WINS 1985 (R1-8485)

	df	Sum of Squares	Mean Square	F	Signif F	Adj R^2
Regression	1	2.01852	2.01852	53.3475	>0.001	0.43193
Residual	68	2.5729	0.03784			

The F ratio of 53.3475, Tables 12, is significant beyond the .001 level and permits the rejection of the null form of hypothesis #3 demonstrating that it is possible, using only the Dissat-factor and board pattern variables to predict a future target election.

Hypothesis #4

This hypothesis, that the Dissat-factor was the most important predictor of ID, is of major concern. Tables 3,4,6,7,9,10 and 11 all demonstrate that the hypothesis is correct. In every case the Dissat-factor had the highest

zero order correlation with the election of that year (ranging from 0.647 to 0.667). It also had the greatest beta weight (ranging from 0.50 to 0.6534). Thus, the Dissat-factor (which is easy to obtain, calculate and is stable) is the best predictor of ID, accounting for around 36% of the variance in ID in the target elections observed. Our previous work (Lutz and Wang 1986) produced very similar results with the Dissat-factor accounting for between 37% and 49% of the variance in those election results. As one of these data sets was from Ohio in 1975 and the other from Texas in 1984 some confidence in these findings appears warranted.

A Tentative Finding

The major problem with the Dissat-factor is that it provides little time for the superintendent to make adjustments. To recall some original commentary about the dissatisfaction process, it was noted that by the time superintendents become aware and incumbents were defeated the handwriting was on the wall and "...it is finished" (Iannaccone and Lutz 1968:175-176). The original attempt to discover early indicators of ID was an effort to solve that problem. Now we know that although being indicators and possessing the ability to account for ID, those standard indicators are not stable and will not predict ID better than chance. Our present data suggest some relief for this problem.

As we wrestled with the prediction problem Wang

suggested that there might be consistent board patterns preceding ID. Those patterns are graphically displayed in Figure 1, and explained in Figure 2 above. Selected board pattern types appear in each regression equation reported here. Preliminary analysis suggests that these pattern variables are stable and will continue to prove useful in the prediction of ID. That analysis is continuing and will be reported at a later time.

Summary and Results

Summary

Until the work of Hunt (1980) research in the dissatisfaction theory progressed without falsification. A review of the literature suggests that only one carefully posited hypothesis was ever refuted. That was the work reported by Burlingame and LeDoux (1972) and they partially solved the problem by positing consistent differences in school districts with standard variables on the rise as opposed to those with indicators in decline. Until the late 1960's nearly every school district had been increasing in most standard variables (i.e. ADA, assessed volution, etc.).

Garberina (1975), working to verify the up-down district problem identified by Barligame and LeDoux (1972), identified a board response factor and demonstrated for the first time a very significant amount of variance in ID that could be accounted for by these variables. This set the stage for predicting ID in future elections. With that attempt "Humpty-Dumpty fell off the wall." Hunt's (1980)

attempt to predict a future election resulted in failure.

Results

1. This research puts Humpty-Dumpty "together again." It has been shown why the standard variables, or even those variables in ratio form, cannot be used to predict future elections even thought they continue to account for significant amounts of the variance in ID in past elections. They simply are not stable over time.

2. The Dissat-factor has been demonstrated to be a stable variable which can predict ID in future elections. This has now been demonstrated in two different states and two separate decades.

3. Other variables dealing with the school board pattern have been identified as useful predictors of ID. All of these precede the target election by at least a year. Research and analysis using the school board pattern as a predictor of ID and of Challengers in school board elections is continuing.

END NOTES

1. Dunleavy (1982) notes five characteristics of critical theory models for viewing educational organizations. These are: (1) not accepting at face value administrator accounts of the organization, (2) challenging the neutrality of administrator accounts, (3) seeing change as episodic and resulting from crises rather that gradual and resulting from slow progress, (4) viewing decision making in a broad socio/political context, (5) embracing popular participation as a major instigator of change. The dissatisfaction theory is absolutely congruent with each of these characteristics. Yet no one has critiqued the dissatisfaction theory from a critical theory perspective.

2. At present no research that has included, or studied as a separate entity, large urban school districts. One reason for this is that, as in Texas, such districts represent a small number of the total districts in any one state, thus making statistical procedures difficult if not impossible (i.e. the total in the population of any state would be quite small, below 20). Also, it is assumed that the politics of larger districts are quite different and perhaps governed by a quite different set of principles. Finally, larger districts are often reluctant to participate in university sponsored or doctoral research studies and have developed complex/bureaucratic mechanisms which must be followed if one is to obtain their cooperation in doing research. In spite of these difficulties it may be time to

test the dissatisfaction theory in large urban districts using both statistical and ethnographic (anthropological) methods. In regard to the latter, Danis (1988) begins using ethnographic methods in large urban setting in her work reported in this issue.

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